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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,249	01/16/2002	Masashi Kiguchi	501.41069X00	3578
20457	7590	06/22/2004	EXAMINER VERBITSKY, GAIL KAPLAN	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-9889			ART UNIT 2859	

DATE MAILED: 06/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,249

Applicant(s)

KIGUCHI ET AL.

Examiner

Gail Verbitsky

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. In light of the Amendment filed on March 03, 2004, the finality of the Office action mailed to applicant on December 12, 2003 is hereby withdrawn and prosecution is re-open.

Claim Objections

2. Claim 6 is objected to because of the following informalities: perhaps applicant should clarify the term "a normal thereto" in line 3. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9-10, 12, 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "narrow gap" in claims 12, 14 is a relative term which renders the claim indefinite. The term "narrow gap" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 9-10: "a gap" makes the claim language confusing because it is not clear what particular structure applicant means. Is that the gap of the tip member, or the gap between the tip and the object?

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 4-5, 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al. (U.S. 6046448) [hereinafter Sato].

Sato discloses in Figs. 1-5 and entire text a device (near-field microscope) in the field of applicant's endeavor, the device comprising a metal (gold) tip member 22 disposed on a substrate, a light source 11 and a polarization element 17 with a polarization modulator 10, an optical member including a collimator 20 and converge lens 3 for irradiating the tip from the polarization modulator so as to generate a near-field light. The device also comprises a mechanism (means to maintain interval (col. 15, line 3)) for controlling a distance between the tip and an object/ sample/ medium, a detector 7 for detecting light reflected or scattered from the sample, a separator for separating (extracting) wave components corresponding (synchronized) with a modulation (polarization modulation) frequency. The element 17 is constituted such that it can permit a specific component of the polarized beam, such as linear component (col. 7, line 50). As shown in Fig. 4, the tip is a triangular (multiangular) pyramid, whose angle is about 90 degree. The device also comprises a dichroic mirror (polarization compensator) 4 which is acting to lessen the difference in reflection of p and s-polarized beams, the mirror 4 is disposed/ slanted in the optical path of the converge lens of the

optical member 3. A controller 16 controls the entire device, including the polarization modulation, processing a signal from the separator, and, inherently, operating by outputting electric signals.

For claim 12: It is inherent, that there can be any gap (delimiting narrow gap) between the tip and the substrate controlled by the distance controller.

The method steps will be met during the normal use of the device state above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Heffels et al. (U.S. 6535283) [hereinafter Heffels].

Sato discloses the device as stated above. In paragraph 6

Sato does not explicitly teach that the probe is switchable to parallel-polarized light or to a perpendicular-polarized light, as stated in claim 3.

Heffels teaches device comprising a light source 11, a probe prism 17. Heffels suggests to use a polarizer and an analyzer for a parallel polarized component of light and a polarizer and an analyzer for a perpendicular light component from the light source or to switch the polarizer and analyzer by 90 degrees between two successive measurements (col. 5, lines 33-48) and thus, determining the intensity of the reflected light.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Sato, so as to make the probe switchable between the parallel-polarized component and perpendicular-polarized component of light, as taught by Heffels, so as to allow the operator to carry two independent reflection measurements and reflection dependent on the angle of incidence, as already suggested by Heffels.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Maeda et al. (U.S. 6738338).

Sato discloses the device as stated above in paragraph 6.

Sato does not explicitly teach a medium is a recording medium as stated in claim 8.

Maeda suggests using a near-field microscope with a recording medium.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device, disclosed by Sato, to investigate a recording medium, as taught by Maeda, because both the recording medium is known to be investigated by a near-field microscopy method and it needs to be investigated because its quality is very important for storing information.

9. Claims 7, 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Fischer (U.S. 5770855).

Sato discloses the device as stated above in paragraph 6.

Sato does not explicitly teach a metal coating, as stated in claim 7, to regulate a gap to a predetermined gap smaller than half wavelength of light of a light source, as stated in claim 9, with the remaining limitations of claims 7, 9-11.

Fischer discloses in Figs. 1-9 and entire text a device in the field of applicant's endeavor, the device comprising a pyramid (polyhedron) probe, whose faces P_i (including opposite faces) are coated with a thin metal coating of aluminum (different material/ predetermined metal) of a predetermined thickness less than 2 micron.

Fischer also teaches that a gap between a point 1 of the probe and an object 6 can be adjusted.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Sato, so as to cover the probe sides/ faces with a metal coating, as taught by Fischer, so as to adjust a resolution and to eliminate the need of regulating the aperture of the device, as already suggested by Fischer.

With respect to the particular gap, i.e., smaller than half wavelength of light of a light source, as stated in claim 9, the particular size of the gap, absent any criticality, is only considered to be the "optimum" size, that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the type of material of the sample to be investigated. In re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to "thereby" (whereby), as stated in claim 11: it has been held that the functional "whereby" statement does not define any structure and accordingly cannot serve to distinguish. In re Mason, 114 USPQ 127, 44 CCPA 937 (1957).

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato.

Sato discloses the device as stated above in paragraph 6.

Sato does not explicitly teach the particular material for the polarization compensator, as stated in claim 6.

The particular material to make the polarization compensator, i.e., glass, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the polarization compensator, disclose by Sato, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the polarization compensator of the device disclosed by Sato, of glass, because glass is well known as an optical material capable of being transparent to some wavelength of light.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Sasaki et al. (U.S. 6469288) discloses a device in the field of applicant's endeavor wherein a top end diameter of the probe is equal to or smaller than $\frac{1}{4}$ (less than $\frac{1}{2}$) of a wavelength of the light of the light source.

Any inquiry concerning this communication should be directed to the Examiner Verbitsky who can be reached at (571) 272-2253 Monday through Friday 8:00 to 4:00 ET.

GKV

Gail Verbitsky

Primary Patent Examiner, TC 2800



July 16, 2004